ATTACHMENT A

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Original) A method for inserting a watermark signal into audio signal data, comprising the steps of:

Fourier transforming audio signal data in the frequency domain in a form of first components and second components;

wavelet transforming absolute values of said first components to generate first spectral coefficients;

discrete cosine transforming a watermark signal to generate second spectral coefficients;

combining said first spectral coefficients and said second spectral coefficients; and

inverse wavelet transforming the combined coefficients.

- 2. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 1, wherein said first components and second components are the magnitudes and phases of coefficients respectively.
- 3. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 1, wherein said step of combining includes a step of performing a weighted addition of said first and second spectral coefficients.
- 4. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 3, further comprising a step of inverse Fourier transforming the output of said inverse wavelet transforming by using said phases of coefficients.
- 5. (Currently amended) The method for inserting a watermark signal into audio signal data as claimed in claim 4, further comprising a step of multiplying [[an]] information from said first spectral coefficients to said second spectral coefficients prior to combing step.
- 6. (Original) The method for inserting a watermark signal into

audio signal data as claimed in claim 5, further comprising a step of multiplying a scaling factor to said second spectral coefficients prior to said combining step.

- 7. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 6, wherein said scaling factor is in the range of $0.01 \sim 0.05$.
- 8. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 5, wherein said information is a function of the sign of said first spectral coefficients.
- 9. (Original) An apparatus for inserting a watermark signal into audio signal data, comprising:
- a means for Fourier transforming audio signal data into amplitude components and phase components;
- a means for wavelet transforming absolute values of said amplitude components to generate first spectral coefficients;
- a means for discrete cosine transforming a watermark signal to generate second spectral coefficients;
- a means for combining said second spectral coefficients to said first spectral coefficients respectively; and

inverse wavelet transforming the coefficients.

- 10. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 9, wherein said combining means comprises a means for multiplying an information from said first spectral coefficients to said second spectral coefficients.
- 11. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 10, wherein said combining means comprises a means for multiplying a scaling factor to said second spectral coefficients.
- 12. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 11, wherein said scaling factor is in the range of $0.01 \sim 0.05$.
- 13. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 9, further comprising a means for inverse Fourier transforming said respectively combined coefficients using said phase components.

- 14. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 10, wherein said information is a function of the sign of said first spectral coefficients.
- 15. (Original) A method for extracting a watermark from a watermark-embedded audio data, comprising steps of:

Fourier transforming a watermark-embedded audio data and an original audio data to generate first components and second components respectively;

Wavelet transforming the absolute magnitudes of said first components of said watermark-embedded audio data and said original audio data respectively;

taking the differences between wavelet-transform coefficients of said watermark-embedded audio data and said original audio data; and

inverse-discrete cosine transforming said differences.

16. (Original) The method for extracting a watermark from a watermark-embedded audio data as claimed in claim 15, further comprising a step of multiplying the sign of said wavelettransform coefficients associated with said original audio data

to wavelet-transform coefficients associated with said watermarkembedded audio data.

- 17. (Original) The method for extracting a watermark from a watermark-embedded audio data as claimed in claim 16, wherein said multiplying step further comprises a step of multiplying a scaling factor to wavelet coefficients associated with said watermark-embedded audio data.
- 18. (Original) The method for extracting a watermark from a watermark-embedded audio data as claimed in claim 16, wherein said sign is obtained by using a signum function.
- 19. (Original) The method for extracting a watermark from a watermark-embedded audio data as claimed in claim 17, wherein said scaling factor is in the range of 20 ~100.
- 20. (Original) An apparatus for extracting a watermark from a watermark-embedded audio data, comprising:
- a means for Fourier transforming a watermark-embedded audio data and an original audio data to generate first components and second components respectively;

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a means for wavelet transforming the absolute magnitudes of said first components of said watermark-embedded audio data and said original audio data respectively;

a means for taking the differences between wavelet-transform coefficients of said watermark-embedded audio data and said original audio data; and

a means for inverse-discrete cosine transforming said differences.

- 21. (Original) The apparatus for extracting a watermark from a watermark-embedded audio data as claimed in claim 20, further comprising a means for multiplying the sign of said wavelet-transform coefficients associated with said original audio data to wavelet-transform coefficients associated with said watermark-embedded audio data.
- 22. (Original) The apparatus for extracting a watermark from a watermark-embedded audio data as claimed in claim 21, further comprising the means for multiplying a scaling factor to wavelet coefficients associated with said watermark-embedded audio data.
- 23. (Original) The apparatus for extracting a watermark from a

watermark-embedded audio data as claimed in claim 21, wherein said sign is obtained by using a signum function.

24. (Original) The apparatus for extracting a watermark from a watermark-embedded audio data as claimed in claim 22, wherein said scaling factor is in the range of 20 ~100.